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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/073,008	02/12/2002	Masayuki Hariya	389.41181X00	5084

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EXAMINER	
OSBORNE, LUKE R	
ART UNIT	**PAPER NUMBER**
2123	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/21/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/073,008	HARIYA ET AL.	
	Examiner	Art Unit	
	Luke Osborne	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/25/2006 has been entered.

Claim Status

2. Claims 17-20 are pending in the instant application.

Claims 17-20 stand rejected.

Applicants' arguments submitted 09/25/2006 have been fully considered, Examiners response is as follows.

Claim Objections

Claim 17 is objected to because of the following informalities:

Claim 17 contains the concept of preparing a model, which logically leads to the concept of having an "already prepared shape model" which is used in the claim and an unprepared model which is not used in the claim. The Examiner finds it difficult to determine the exact meaning of the term "preparing" and the difference between a

prepared and an unprepared model in light of the usage in the claim and the description in the specification. Further, Applicant's arguments provide no further insight into what preparing means.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Database Techniques for Archival of Solid Models by McWherter et al hereinafter "McWherter" in view of U.S.PG-Pub No. 2002/0042697 "Yamada" (previously cited).

Regarding claim 17, McWherter teaches an analytical model preparing apparatus comprising:

means for entering a shape model to be analyzed [Distance-based indexing and clustering will enable efficient retrieval of models that are similar to a given query model (The given model means that the reference must contain means for entering such a model to be analyzed) Page 78, column 2];

a database which maps each of a plurality of already prepared shape model with an analytical mesh model and registers the same [store a collection of CAD/CAM models in a database and perform efficient search and retrieval of these models (Page 80, Section 3)];

degree of approximation calculating means including [topological similarity assessment of solid models (Page 78, Abstract)]:

means for preparing associated information of shape elements by comparing shape elements in the shape model to be analyzed with the shape elements in the already prepared shape models and associating the shape elements in the shape model to be analyzed with the shape elements in the already prepared shape models, [To this end, as described in Figure 1, we first construct a mapping from the boundary representation of solid models to a graph-based data structure that we call the Model Signature Graph (The shape elements are represented in the data structure, this is used to query or associate as claimed the elements with each other) Page 80, Section 3, paragraph 2];

means for calculating a degree of approximation of the shape elements of the already prepared shape models based on the number of shape elements of the shape model to be analyzed associated with the associated information of the shape elements [A primary goal of the distance metric is to ensure that two identical graphs have no distance between them. In addition, two graphs with only minor differences should consistently be measured relatively closely (page 81-82, Section 3.2 EigenDistance-Based Similarity)], and

means for displaying the already prepared shape models sequentially from larger to smaller degrees of approximation on a display screen[Figure 2 page 81], and

means for selecting in response to an instruction, at least one already prepared shape model from among said already prepared shape models displayed [Figure 5 on page 83 shows the similarity matrix for the models in the study]; and

McWherter does not expressly teach that an analytical model (mesh) is prepared for the entered shape model. However, McWherter does teach that there is no significant restriction on the attributes stored in the vertices and edges in a MSG. The selection to be used in applied systems will most likely be tailored to meet the needs of the particular application.

Yamada teaches not only that (analytical models) meshes are a typical feature of CAD or CAE applications and models [Yamada : 0005], and therefore would be an attribute that could be stored in a MSG. Further Yamada teaches analytical model

preparing means [creating a mesh from a template mesh] for preparing an analytical model of the shape model to be analyzed by use of information prepared for the analytical model corresponding to said already prepared shape model selected. [Yamada: figure 9, Paragraphs 0078-0081] These paragraphs describe how a new mesh is generated for a changed (therefore similar) part using the similar part, improving the analytical model (mesh) if necessary.

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to combine the solid model database system of McWherter with the analytical model generation means.

The motivation to do so is found in Yamada paragraph 0006, which states that the automatically generated mesh may not be suitable for the analysis to be performed, and as figure 1 shows and paragraph 0036 teaches that a shape differing but similar the intent of the designer can still be captured. The combination as taught would allow the designer to have access to a multitude of similar parts available, which as Yamada teaches saves time.

Applicant's Argument

McWherter, which is merely directed to archiving solid models in a relational database management system, does not teach or suggest preparing associated information of shape elements, by comparing shape elements of an input shape model with shape elements of shape models in a template, as claimed.

Examiners Response

The Examiner has considered Applicant's argument to the extent that Applicant's arguments are based on claimed limitations and found them unpersuasive. The Examiner does not find the terms "input shape model" and "shape models in a template" in any claim.

In particular, the preparing associated information on the shape elements is taught as cited above. The transformation from the solid model to a model signature graph and beyond is preparing the shape model to analyzed with all the other models that have also been prepared in this manner. The associating of the shape elements in the analyzed model to the rest of the models is trivial and preformed by actually storing the information in the database.

Applicant's Argument

McWherter dies not teach preparing associated information of shape elements, in the manner claimed. Therefore it follows that McWhereter does not teach a means for calculating a degree of approximation based on the shape elements of the shape model to be analyzed associated with the associated information of the shape elements. McWherter merely discloses techniques of spectral graph theory as a basis for approximating graph similarity among model signature graphs. This is not the same as means for calculating a degree of approximation of shape elements of the already prepared shape models based on the number of shape elements of the shape model to

be analyzed associated with the associated information of the shape elements, in the manner claimed.

Examiner's Response

The Examiner has considered Applicant's argument and found them to be unpersuasive. Applicant's argument concludes that the reference cited is different then the limitations found in the claim. Applicant's arguments however provide no insight into how the claimed invention operates or has inherent functionality that distinguishes from the reference applied. Further Applicant's argument is unpersuasive since McWherter does teach preparing associated information of shape elements as previously discussed above.

Applicant's Argument

There is no teaching or suggestion in Yamada of an analytical model preparing means for preparing an analytical mesh model, in accordance with the associated information of the shape elements between the shape elements in the shape model to be analyzed and the shape elements in the already prepared shape models in the manner claimed.

Examiner's Response

The Examiner has considered Applicant's argument and found them to be unpersuasive. Yamada teaches a mesh generating system as acknowledged by Applicant in the instant response page 12. Figure 9, in Yamada shows the generation of a mesh model based on the characteristics of a template mesh. In the combination the

template mesh is the selected mesh, this generation is then done in accordance with the information (shape elements) of the shape model.

Claims 18-20 are taught by the combination applied to claim 17, further in view of McWherter.

The claims recite where the approximation calculating means includes comparing

(claim 18) an intrinsic identifier [as best understood an intrinsic identifier is as defined in the instant specification paragraph 0059 as "Shape elements such as solid, surface, segment and point composing a shape model have a solid number, a surface number, a segment number and a point number as intrinsic identifiers in the shape model" is taught by a topological identifier for the face (planar, conical, etc) page 81]

(claim 19) topological information [topological identifier for the face (page 81)]

(claim 20) coordinate values [edges of the graph (page 81)]

of the shape elements in the shape model to be analyzed with the one in the database. These features are taught by McWherter as shown above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luke Osborne whose telephone number is (571) 272-4027. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul L. Rodriguez can be reached on (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LRO

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12/19/06